



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Memorandum

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SUBJECT: Initial Onions Benefits Assessment for Azinphos-methyl

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SUMMARY

According to available published data and personal communications with crop experts, BEAD believes that the impacts that may result from extending the restricted entry intervals on onions for azinphos-methyl use would be insignificant. This conclusion was reached primarily on the basis that grower production practices are not likely to be altered by the extension of restricted entry intervals. Azinphos-methyl represents a minor use on onions, and if the increased restricted entry interval interfered with its use, BEAD believes that growers would replace it with one of several efficacious and comparably priced alternatives.

BACKGROUND

United States commercial onion production is divided into two seasons: spring and summer. Spring grown onions account for 22% of the harvested acres and 16% of the total production. Summer grown onions, the larger of

the two categories, account for about 78% of the harvested acres and 84% of the total pounds of production. Summer production is divided into two end-uses: non-storage and storage. Summer onions for non-storage account for about 8% of total acres and about 9% of total U.S. production. Summer onions for storage account for about 69% of total U.S. harvested acres and about 76% of total U.S. production. See table 1 for additional information.

Of the onion producing states, California and Texas produce in both the spring and summer. Washington produces only summer onions, and is the only state that produces for both the non-storage and storage end-uses. See tables 2, 3, and 4 for state information by season and end-use.

Table 1. Commercial Onions: 1999 Area, Production, and Value of Production in the U.S. by production season and end-use.

U.S./State	Harvested Acreage	Production (million pounds)	Percent of U.S. Production	Value of Production (\$1000)
United States	169,200	7,138	100%	\$728,066
Spring	37,500	1,122	16%	\$184,913
Summer	131,800	6,016	84%	\$530,018
Non-Storage	14,300	617	9%	\$99,251
Storage	117,500	5,399	76%	\$430,767

Source: USDA/NASS Agricultural Statistics 2000.

Note: Columns may not sum due to rounding.

Tables 1, 2, and 3, for the U.S. as a whole and individual States, list significant commercial U.S. producers of onions under spring, summer non-storage, and summer storage production systems. The tables provide information on harvested acres, pounds of production, percent of total U.S. production, and value of production. The data used is from the National Agricultural Statistics Service's Agricultural Statistics 2000 for crop year 1999.

Total U.S. spring onion production was 1.1 billion pounds in 1999, and was valued at \$184.9 million. The states which account for significant U.S. spring onion production are Texas (362 million pounds), California (321 million pounds), Georgia (276 million pounds), and Arizona (164 million pounds). See table 2 for additional information.

Table 2. Commercial Onions, Spring: 1999 Area, Production, and Value of Production in the U.S. by State.

U.S./State	Harvested Acreage	Production (million pounds)	Percent of U.S. Spring Production	Value of Production (\$1000)
United States	37,500	1,122	100%	\$184,913
Arizona	3,000	164	15%	\$9,042
California	7,300	321	29%	\$38,223
Georgia	14,500	276	25%	\$74,661
Texas	12,700	362	32%	\$62,988

Source: USDA/NASS Agricultural Statistics 2000.

Note: Columns may not sum due to rounding.

Total U.S. summer onion production for non-storage was 617 million pounds in 1999, and was valued at \$99.3 million. The states which account for significant U.S. production of summer onions for the non-storage end-use are New Mexico (320 million pounds), Texas (140 million pounds), Nevada (129 million pounds), and Washington (29 million pounds). See table 3 for additional information.

Table 3. Commercial Onions, Non-Storage: 1999 Area, Production, and Value of Production in the U.S. by State.

U.S./State	Harvested Acreage	Production (million pounds)	Percent of U.S. Summer (Non-Storage) Production	Value of Production (\$1000)
United States	14,300	617	100%	\$99,251
Nevada	2,800	129	21%	\$10,304
New Mexico	7,100	320	52%	\$51,120
Texas	3,500	140	23%	\$30,800
Washington	800	29	5%	\$7,027

Source: USDA/NASS Agricultural Statistics 2000.

Note: Columns may not sum due to rounding.

Total U.S. summer onion production for storage was 5.4 billion pounds in 1999, and was valued at \$430.8 billion. The top six production States (in terms of pounds of production), which account for approximately 95% of U.S. production of summer onions for the non-storage end-use are California (1,523 million pounds), Oregon (1,224 million pounds), Washington (882 million pounds), Idaho (553 million pounds), Colorado (537 million pounds), and New York (353 million pounds). See table 4 for additional information.

Table 4. Commercial Onions, Summer Storage: 1999 Area, Production, and Value of Production in the U.S. for the Top States.

U.S./State	Harvested Acreage	Production (million pounds)	Percent of U.S. Summer (Storage) Production	Value of Production (\$1000)
United States	117,500	5,399	100%	\$430,767
California	35,000	1,523	28%	\$109,620
Colorado	14,500	537	10%	\$62,771
Idaho	7,900	553	10%	\$34,286
New York	12,600	353	7%	\$47,275
Oregon	20,100	1,224	23%	\$88,581
Washington	18,000	882	16%	\$62,622

Source: USDA/NASS Agricultural Statistics 2000.

Note: Columns may not sum due to rounding.

USE OF AZINPHOS-METHYL ON ONIONS

Table 5 lists total azinphos-methyl usage on all commercial onions. Specific azinphos-methyl usage data by season (spring and summer) and end-use (storage and non-storage) is not available. The table provides data on percent of crop treated, base acres treated, total pounds of active ingredient applied, average number of applications per year, and average application rates per acre. Most of the data is from the National Agricultural Statistics Service's (NASS) Agricultural Chemical Usage, Vegetable Summary covering crop year 1998. However, usage data covering Idaho, Michigan, Utah, and Washington are from the National Center for Food and Agricultural Policy's 1997 Pesticide Use Report because NASS either did not survey these states or did not publish data.

Approximately 2% of U.S. commercial onion acreage is treated with azinphos-methyl per year and 2,369 pounds of azinphos-methyl are applied. Based on the available data sources, in terms of base acres treated, Washington is the leading state treating an estimated 1,880 acres and is followed by Idaho, Utah, and Michigan treating 1,185, 540, and 280 acres, respectively. See table 5 for additional information.

Table 5. Azinphos-methyl use on Commercial Onions by Major State.

U.S./State	Percent of Crop Treated	Base Acres Treated (acres) ¹	Total Pounds Applied (lbs)	Average Number of Applications (#/year)	Average Application Rate (lbs/acre)	Cost (\$/acre treated)
United States ²	2%	3,384	2,369	1.0	0.7	-
Idaho ³	15%	1,185	889	1.0	0.75	-
Michigan ³	7%	280	252	1.0	.90	-
Oregon	NP	NP	NP	NP	NP	-
Utah ³	20%	540	405	1.0	0.75	-
Washington ³	10%	1,880	1,166	1.0	0.62	-

Source: USDA/NASS Vegetable Chemical Use, 2000 unless otherwise indicated.

'NP' indicates that usage was observed and that data were collected by NASS but were not published.

A dash (-) indicates that data were either not available or not applicable.

1. Base acres treated calculated using percent of crop treated estimates and acreage data from Tables 1, 2, 3, and 4. Column does not sum to U.S. total because of different data sources.

2. Base acres treated and pounds of active ingredient applied, at the national level, were calculated using the percent of acres treated and the average application rate per year per acre from the U.S. EPA Quantitative Usage Analysis (QUA) of 4/99 and acres harvested from table 1. The QUA estimates an average of 2% of the total onion crop treated and 2,000 pounds of active ingredient applied in the U.S. Based on ten years of data and multiple data sources.

3. Percent of base acres treated, application rate per acre, and number of applications per year are from the National Center for Food and Agricultural Policy (NCFAP), 1997 estimates. Base acres treated and total pounds of active ingredient are calculated using these estimates and acres harvested from table 1. NASS surveyed and observed azinphos-methyl usage in Michigan and Washington but, because data were not published, NCFAP 1997 data were used.

Usage of Azinphos-methyl on Onion by Target Pest

The onion target pests for azinphos-methyl are listed in Table 6. Nearly all of azinphos-methyl usage on onion is for the control of these four target pests. Azinphos-methyl is used on onion solely for the control of thrips.

Table 6. Target Pests for Azinphos-methyl

Active Ingredient	Target Pest - Listed in Order of Importance (Based on Estimated Usage by Pest ¹)
Azinphos-Methyl	Thrip

Sources: EPA proprietary data.

1. Importance based on the proportion of total azinphos-methyl usage (total acre treatments) for the control of the pest.

Table 7. Leading Insecticides used for control of the Onion Thrip.

Insecticide - Listed in Order of Importance (Based on Estimated Usage by Pest) ¹	Approximate Share of Total Insecticide Usage to Control the Onion Thrip	% Crop Treated (All Pests) ²
1. Cyhalothrin-Lambda	45%	31%
2. Methomyl	10%	10%
3. Permethrin	10%	18%
4. Cypermethrin	10%	16%
5. Zetamethrin	7%	10%
6. Diazinon	5%	9%
7. Methyl Parathion	5%	6%
8. Malathion	3%	4%
9. Neem Oil	1%	-
10. Oxamyl	1%	5%
11. Chlorpyrifos	1%	33%
12. Azinphos-Methyl	< 0.5%	5%

Source: USDA/NASS

A dash (-) indicates that data are not available.

Azinphos-methyl Use and Alternatives

California, Colorado, Georgia, New York, Oregon, Texas, and Washington are the leading onion producing states. According to Mr. Bob Ehn, consultant and onion expert, California is leading with 55,000 acres. Georgia is leading in fresh market onions. According to Dr. David Adams of Georgia Cooperative Extension Service, Mr. Stanley Nowak of Nowak Farms in New York, and Mr. Bob Ehn, Ag Consultant in Clovis, California, very little azinphos-methyl is used on onions. Further restrictions on its use would not have a significant impact on onion production in the U.S. Azinphos-methyl is mainly labeled for onion thrips. There are several efficacious alternatives that growers have access to use for control of onion thrips including: azadirachtin, lambda-cyhalothrin, zeta-cypermethrin, diazinon, methomyl, malathion, and permethrin. Considering the number of available, effective alternatives, BEAD does not believe that onion producers will suffer any significant economic impacts from further restrictions on azinphos-methyl.

RESTRICTED ENTRY INTERVALS

Azinphos-methyl - The current label indicates that on onions there is a 48 hour restricted entry interval (REI) for mowing, irrigating, and scouting. The REI for all other activities is 4 days (increasing to 5 days in areas with less than 25 inches of rain per year). Please refer to the occupational and residential human health risk assessment on the Agency's website (<http://www.epa.gov/pesticides/op>) for information concerning the worker risks associated with the restricted entry intervals for this chemical.

BEAD believes that the extension of a restricted entry interval for azinphos-methyl on onions would not result in a significant impact on onion production in the U.S.

References

California Department of Pesticide Regulation, Pesticide Use Reporting, 1998 and 1999 census data.

National Center for Food and Agricultural Policy (NCFAP), 1997 pesticide use database.

USDA/NASS Agricultural Chemical Use, 1998 Vegetable Summary 1999.

USDA/NASS Agricultural Statistics 2000.

Dr. David Adams, Research and extension entomologist, University of Georgia.

Mr. Bob Ehn, Consultant and onion expert, Clovis, California.

Mr. Stanley Nowak, Onion grower and owner of Nowak Farms, Pine Island, New York